Thermo
ELECTRON CORPORATION

TRACE GC

AI/AS 3000 Autosampler

User's Manual

Published by Technical Publications, Thermo Electron S.p.A
Strada Rivoltana
20090 Rodano-Milan
Italy

Printing History: Revision E printed May 2004.

Xcalibur™ and TRACE GC ™ are trademarks and/or product names of Thermo Electron Corporation. Microsoft® is a registered trademark of Microsoft Corporation.

Technical information contained in this publication is for reference purposes only and is subject to change without notice. Every effort has been made to supply complete and accurate information; however, Thermo Electron Corporation assumes no responsibility and will not be liable for any errors, omissions, damage, or loss that might result from any use of this manual or the information contained therein (even if this information is properly followed and problems still arise).

This publication is not part of the Agreement of Sale between Thermo Electron Corporation and the purchaser of a Thermo Electron system. In the event of any conflict between the provisions of this document and those contained in Thermo Electron Corporation's Terms and Conditions, the provisions of the Terms and Conditions shall govern. Reference to System Configuration and Specifications supersede all previous information and are subject to change without notice.

The GC/MS and LC/MS products of the Thermo Electron Division are produced under ISO 9001 accredited quality management systems.

U.S.A.: Thermo Electron 355 River Oaks Parkway San Jose, CA 95134-1991 [1] (408) 965-6000

Australia: Thermo Electron P.O. Box 239 Rydalmere Unit 20, Metro Centre 38 – 46 South Street Rydalmere, N.S.W. 2116 [61] (02) 9898-9000

Austria: Thermo Electron GmbH Wehlistrasse 27b A-1200 Wein [43] (01) 333 50 34-0 info.quest@thermo.at

Belgium: Thermo Electron BVBA Groenenbrogerlaan 84 B-2610 Wilrijk (Antwerpen) [32] (03) 825 0670

Canada: Thermo Electron Canada 5716 Coopers Avenue, Unit 1 Mississauga, Ontario L4Z2E8 [1] (905) 712-2258

France: Thermo Electron France SA Parc Hightec Sud 12 Avenue des Tropiques Z.A. de Courtaboeuf BP141 F-91944 Les Ulis Cédex [33] (01) 69 18 88 10

Germany: Thermo Electron Analytische Systeme GmbH Boschring 12 D-63329 Egelsbach [49] (06103) 408 0

Italy: Thermo Electron S.p.A. Strada Rivoltana I-20090 Rodano (Milano) [39] (02) 95059 1

Japan: Thermo Electron K.K. Nishi-Shinjuku Toyokuni Bldg. 3F 2-5-8 Hatsudai, Shibuya-ku Tokyo 151-0061 [81] (03) 3372-3001

Japan: Thermo Electron K.K. Esaka Grand Building 2-3-1 Esaka-cho, Suita City Osaka 564-0063 [81] (06) 6387-6681

Netherlands: Thermo Electron BV Druivenstraat 33 NL – 4816 KB Breda [31] (076) 587 8722

P.R. China: Thermo Electron China Suite 912-916, Ping An Mansion. No. 28, Jin Rong Street Xicheng District Beijing 100032 [86] (010) 6621 0839

Spain: Thermo Electron SA Acer 30 – 32 Edificio Sertram – Planta 2, Modulo 3 ES-08038 Barcelona [34] (093) 223 0918

Spain: Thermo Electron SA Avenida de Valdelaparra 27 Edificio Alcor – Planta 2a ES-28108 Alcobendas (Madrid) [34] (091) 657 4930

Sweden: Thermo Electron AB Pyramidbacken 3 S-141 75 Kungens Kurva (Huddinge) [46] (08) 680 0101

United Kingdom: Thermo Electron Ltd. Paradise Hemel Hempstead Herts HP2 4TG [44] (01) 442 233 555

Notes: The country code is enclosed in square brackets [ ]. The city code or area code is enclosed in parenthesis ( ). For countries other than the U.S.A., when you are dialing from within the specified country, dial the 0 of the city code. For countries other than Italy, when you are dialing from outside the country, do not dial the 0 of the city code.

Copyright© 2004 Thermo Electron, Scientific Instruments. All rights reserved.. Printed in Italy

Contents

Chapter 1
AI/AS 3000 Set Up View 5

1.1 Configuration 6
Configuration Screen 6
1.2 AI/AS 3000 Method Editor 7
AI/AS 3000 Page 7
Sampling 7
Injection 8
Washes 8
AI/AS3000 Command Menu 9
1.3 Setting AI/AS 3000 Parameters 10

Chapter 1
AI/AS 3000 Set Up View

This chapter contains informations to configure and to set the AI/AS 3000 Autosampler

This chapter contains these topics:

Configuration 6

AI/AS 3000 Method Editor 7

Setting AI/AS 3000 Parameters 10

1.1 Configuration

Configuration Screen

Items listed under this heading contain definitions to each control you see listed in this Instrument Configuration window.

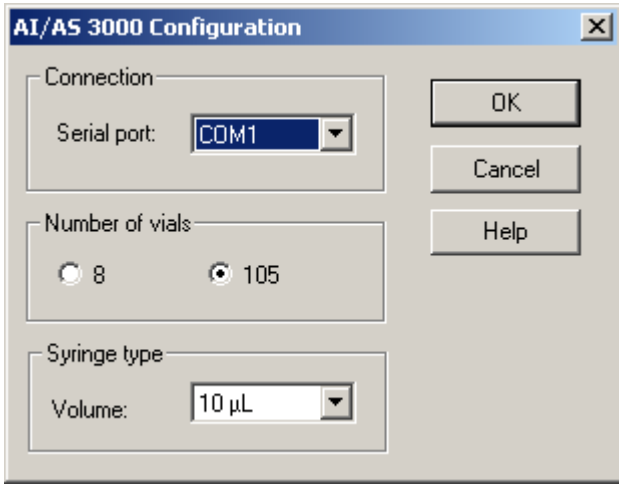


Figure 1-1. AI/AS 3000 Configuration Screen

Connection

Serial Port This parameter specifies the communication port to be used for the AI/AS 3000 sampler, it can be through the GC or alternatively can be any COM Port from 1 to 8.

Number of vials

8 Vials Check this box if you are using the AI 3000 autosampler

105 Vials Check this box if you are using the AS 3000 autosampler

Syringe Type

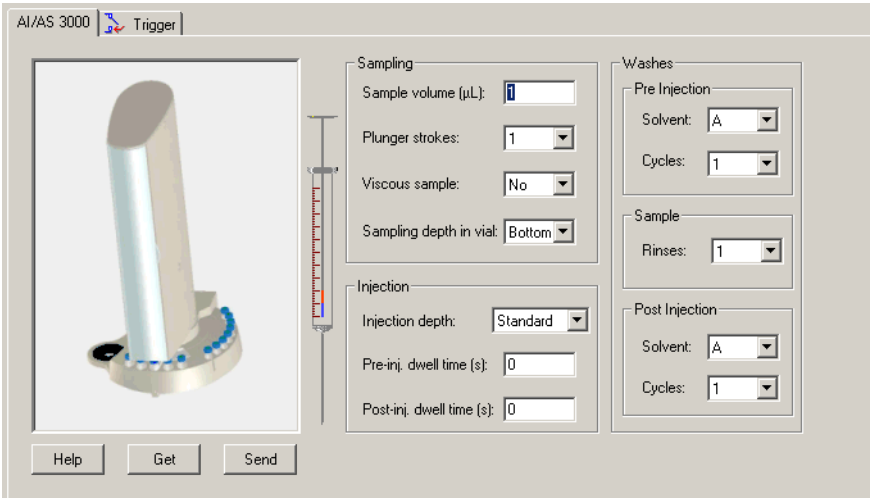
Volume This parameter specifies the volume of the syringe in use.

Click **OK** after you are satisfied with your selection. Click **Cancel** if you would like to exit without saving your changes. Click **Help** for this page to display.

1.2 AI/AS 3000 Method Editor

The Method Editor screen has four tabs which contain all of the parameters used to set up injection events. Click the links below to find out more about the parameters in the each tab.

AI/AS 3000 Page



Sampling

Sampling Group Box

This group box contains the parameters to control syringe rinse, bubble elimination, sample pull-up speed from the vial to the syringe and needle penetration depth into the sample vial.

Sample volume (ml) This is the volume in microliters of sample injected..
With the 10 µL syringe set a value from 0 to 5 µL in step of 0.1 µL.
With the 5 µL syringe set a value from 0 to 2.5 µL in step of 0.1 µL.

Plunger strokers The number of times the syringe plunger will be pulled up and down to eliminate any bubbles from the sample.
Set a value from 0 to 15.

Viscous sample It calculates automatically the speed the sample is pulled-up (withdrawn) from the vial to the syringe.
Set **No** for no viscous or low viscous sample.
Set **Yes** for high viscous sample.

Sampling depth in vial: Determines the penetration depth of the syringe needle into the vial.
When **Bottom** is set (default value) the syringe needle penetrates up to the bottom of the vial.
When **Center** is set, the syringe needle penetrates up to the half of the vial.

Injection

Injection Group Box

This group box contains the parameters to control the penetration depth of the needle into the injector and the time the syringe needle stays in the injector before or after the sample is injected.

Injection depth: It determines the penetration depth of the syringe needle into the vial.
When **Standard** is set (default value) the syringe needle penetrates into the injector up the maximum depth limit.
When **Minimum** is set, the syringe needle penetrates into the injector up to go beyond the septum only. .

Pre-inj. dwell time (s) Enter the time in seconds the syringe needle is held in the inlet before the injection of sample. When you specify a delay of more than a few seconds, the needle preheats, which makes a Hot Needle Injection.
Set the wait time from 0 to 63 seconds.

Post-inj. dwell time (s) Enter the time in seconds the syringe needle is held in the after the injection of sample.
A delay of more than a few seconds will heat the needle with the possible effect of driving those heavier analytes that have condensed in the needle out. A solvent flush technique may work better.
Set the wait time from 0 to 63 seconds.

Washes

Washes Group Box

These sections control the sample and pre- and post-rinses used to clean the syringe.
Controls displayed in this group box are for Pre Injection, Sample, and Post Injection.

Pre Injection Group Box

The parameters used to pre-rinse the syringe before drawing up the sample.

Solvent Select which of the four solvent vials or the combination of two solvent vials will be used as the pre-rinse solvent choosing between the following options. **A**, **B**, **C**, **D**, **A+B**, **C+D**.
Different solvent vials combinations than A+B or C+D are not possible.

Cycles The number of times the solvent rinses the syringe. Select a number from the pull-down list box.

Sample Box

Use this control to pre-rinse the syringe with sample before actually pulling up the sample for injection.

Rinses: The number of times the sample rinses the syringe. Select a number from 0 to 15.

Post Injection Box

The parameters used to rinse the syringe after the sample has been injected.

Solvent Select which of the four solvent vials or the combination of two solvent vials will be used as the post-rinse solvent choosing between the following options. **A**, **B**, **C**, **D**, **A+B**, **C+D**.
Different solvent vials combinations than A+B or C+D are not possible.

Cycles The number of times the solvent rinses the syringe. Select a number from the pull-down list box.

AI/AS3000 Command Menu

This menu allows to access the following function

Get Method from Sampler This function allows transferring method data from autosampler to GC.

Send Method to Sampler This function transfers the analytical method from the memory of the GC to the autosampler and enables the method.

Start Clean Cycle This function permits to start a clean cycle.

Inject Single Sample This function permits to start an single sample injection.

Force Autoinjector to Stand-by This function interrupts any current operation on the sampler putting it in stand-by condition.

1.3 Setting AI/AS 3000 Parameters

1. In the Sampling group box, specify values in Sample fields.
   a. In the Sample volume box, specify the volume of sample injected.
   b. In the Plunger strokes box, specify the number of bubble elimination strokes for the syringe plunger.
   c. In Viscous box, specify if the sample is viscous.
   d. In Sampling depth in vial box, specify the penetration depth of the syringe needle into the vial.
2. In the Injection group box, specify values in the Injection fields.
3. In the Sample box, specify the number of times the sample rinses the syringe.
4. In the Pre-Injection group box, select Solvent A, B, C, D, A+B or C+D.
   a. Specify the amount of solvent used to rinse the syringe in the **Solvent** field.
   b. Specify the number of times to rinse the syringe in the **cycles** field.
5. In the Post-Injection group box, select Solvent A, B, C, D, A+B or C+D.
   a. Specify the amount of solvent used to rinse the syringe in the **Solvent** field.
   b. Specify the number of times to rinse the syringe in the **cycles** field.